

**MISSOURI DEPARTMENT OF NATURAL RESOURCES  
AIR AND LAND PROTECTION DIVISION  
ENVIRONMENTAL SERVICES PROGRAM  
Standard Operating Procedures**

SOP #: MDNR-FSS-018      EFFECTIVE DATE: August 8, 2002

SOP TITLE: Sample Handling: Field Handling, Transportation, and Delivery to the ESP Lab

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SUMMARY OF REVISIONS:      Minor updates were made throughout the document.  
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APPLICABILITY:      Applies to ESP field personnel who handle samples in the field, and  
includes procedures for sample transportation, sample shipment by  
commercial courier, and handling of samples upon return to the ESP  
laboratory facility.

DISTRIBUTION:      MoDNR Intranet  
ESP SOP Coordinator  
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RECERTIFICATION RECORD:

<b>Date Reviewed</b>				
<b>Initials</b>				

## 1.0 SCOPE AND APPLICABILITY

Once samples have been collected, proper sample handling procedures are necessary to ensure sample integrity and to maintain a legally defensible chain-of-custody. The procedures described within this SOP provide guidance to field personnel in handling samples while in the field, in transport, and upon delivery to the ESP laboratory.

## 2.0 PROCEDURE

- 2.1 For many parameters, standard protocol (see MDNR-FSS-001 *Required/Recommended Containers, Volumes, Preservatives, Holding Times, and Special Sampling Considerations*) requires that samples be chilled to 4° Celsius as soon as possible following collection. The samples should be maintained at 4° C while in transport and in storage prior to analysis. While in the field and in transportation, this requirement is accomplished by placing samples on ice in coolers. Unless freezing samples is appropriate, dry ice should not be used. Blue Ice or other chemical ice packs are generally not sufficient to both chill and maintain samples at 4° C.
- 2.2 While in the field, coolers should be checked periodically throughout the day to ensure that the samples do not become submersed in water from melted ice. Most of the coolers used by the ESP for sample collection have drain plugs that should be used to frequently expel excess water.
- 2.3 Whenever glass sample containers are used, care must be taken to avoid breakage while in transit. Bubble wrap is available from the ESP Sample Receiving and Storage Room and may be used to cushion sample containers.
- 2.4 The sample collector must maintain custody of the samples at all times up to the time when the samples are relinquished to a sample custodian at the ESP. Whenever samples are not within sight of the sample collector (e.g. when other samples are being collected, while on lunch breaks, etc.) then the samples must be placed in a locked vehicle or other secure area.
- 2.5 For overnight trips, sample coolers can be either taken into the hotel room or left in a locked vehicle. The sample collector should be aware of the weather forecast during winter months since water samples, especially VOA vials with zero headspace, will freeze and burst in extremely cold temperatures if left overnight in a locked vehicle.
- 2.6 On occasion the sample collector will need to give the samples to another ESP employee for the purposes of transporting the samples to the ESP laboratory. Whenever the sample collector relinquishes the samples to another person, the sample transfer must be recorded on the Field Sheet and Chain-of-Custody Record. Refer to MDNR-FSS-002 *Field Sheet and Chain-of-Custody Record* for further guidance on using this

important legal document. The person who accepts custody of the samples should review the Field Sheet and Chain-of-Custody Record for completeness and inspect the sample containers to ensure there are no problems (e.g., missing labels or broken containers). The person accepting custody of the samples should also ensure that the samples are kept properly iced and that the cooler(s) are frequently drained of excess water if necessary.

- 2.7 If samples are shipped to the ESP via commercial courier, then the sample collector must seal the cooler(s) with strapping tape to help ensure that the samples are not tampered with in transit. Before the sample cooler(s) are sealed and turned over to the commercial courier, the cooler(s) should be thoroughly drained and packed with ice. The Field Sheet and Chain-of-Custody Record must be completed, sealed in a ziplock plastic bag, and taped to the inside of the cooler lid. Each cooler must then be wrapped with strapping tape so that the lid is secured. The strapping tape should then be signed across the end of the tape and dated by the person offering the samples for shipment. The commercial courier does NOT sign the Field Sheet and Chain-of-Custody Record. The commercial courier will then deliver the samples to the ESP Sample Receiving and Storage Room during normal business hours where a sample custodian will take receipt and note the condition of the samples and whether or not there is evidence of tampering.
- 2.8 Samples that are hand delivered by ESP personnel to the laboratory during normal business hours should be delivered to the Sample Receiving and Storage Room in the Chemical Analysis Section (CAS) for transfer of custody. Upon delivery, CAS personnel will review the Field Sheet and Chain-of-Custody Record for completeness and will inspect the sample containers and labels to ensure the information recorded on the Field Sheet and Chain-of-Custody Record agrees with the number and type of samples being delivered for analyses. Any discrepancies will be noted at that time. Once the sample transfer has been completed, a CAS representative will sign the Field Sheet and Chain-of-Custody Record and log the samples into the Laboratory Information Management System.
- 2.9 Samples that are returned to the ESP laboratory after business hours should be secured overnight in one of the locked metal refrigerators that are located in both the decon room and the old garage at the ESP. The samples should then be delivered to the CAS on the following business day for proper check-in.

### 3.0 REFERENCES

MDNR-FSS-001 *Required/Recommended Containers, Volumes, Preservatives, Holding Times, and Special Sampling Considerations*

MDNR-FSS-002 *Field Sheet and Chain-of-Custody Record*